

PROPOSED
REVISION TO ALLEGHENY COUNTY'S PORTION
of the
PENNSYLVANIA STATE IMPLEMENTATION PLAN
for the
ATTAINMENT AND MAINTENANCE
of the
NATIONAL AMBIENT AIR QUALITY STANDARDS

(Revision Tracking No. 84D)

Amendment to

**Reasonably Available Control Technology (RACT) Plans
For the 2008 8-Hour Ozone National Ambient Air Quality Standard**

**RACT for Major Stationary Non-CTG VOC Sources and Major Stationary NOx
Sources**

(Revision Tracking No. 84D)
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A.
Reasonably Available Control Technology (RACT)
State Implementation Plan (SIP) Revision for the 8-Hour Ozone National
Ambient Air Quality Standard (NAAQS)

SIP84D
RACT for Major Stationary Non-CTG VOC Sources and Major Stationary NO_x
Sources

1. Introduction

This is a proposed revision to the State Implementation Plan (SIP) identifying Reasonably Available Control Technology (RACT) under the 8-Hour Ozone National Ambient Air Quality Standards (NAAQS).

Statutory Authority:

25 Pennsylvania Code Subpart C Article III, Chapter 133: Local Air Pollution Agencies

Background:

The federal Clean Air Act (CAA) of 1990 gives the states primary responsibility for achieving the NAAQS. The NAAQS are established by the U.S. Environmental Protection Agency (EPA) as the maximum concentrations in the atmosphere for specific air contaminants, set to protect public health and welfare. The principal mechanism at the state and local level for complying with the CAA is the State Implementation Plan (SIP). A SIP outlines the programs, actions, and commitments that a state will carry out to fulfill its responsibilities under the CAA. Once approved by the EPA, a SIP is a legally binding document under both state and federal law.

Ground level ozone, one of the principal components of “smog,” is a serious air pollutant that is known to affect human health and the environment. High levels of ozone can damage the respiratory system causing breathing problems, throat irritation, coughing, chest pains, and increase susceptibility to respiratory infection. High levels of ozone also cause serious damage to forests and agricultural crops, which results in economic loss to logging and farming operations. In May 2012, EPA designated 46 areas of the country as “non-attainment” under the 2008 8-hour ozone NAAQS. Among those non-attainment areas is the Pittsburgh-Beaver Valley Ozone Non-Attainment Area (NAA) located in Pennsylvania.

Ozone is generally not directly emitted to the atmosphere; rather it is formed in the atmosphere by photochemical reactions between volatile organic compounds (VOC), oxides of nitrogen (NO_x), and carbon monoxide (CO) in the presence of sunlight. In order to reduce ozone concentrations in the ambient air, the CAA requires all non-attainment areas to apply controls on VOC/NO_x emission sources to achieve emission reductions. CO’s role in forming ozone is relatively insignificant; therefore, the CAA does not specify requirements on CO emission reductions regarding ozone attainment.

Among effective control measures, the Reasonably Available Control Technology (RACT) controls are a major group for reducing VOC and NOX emissions from stationary sources.

Requirements:

The US Environmental Protection Agency (EPA) has defined RACT as the lowest emission limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility (44 FR 53761 at 53762, September 17, 1979). Section 182 of the CAA sets forth separate RACT requirements for ozone non-attainment areas.

- The first requirement, contained in section 182(a)(2)(A) of the CAA, and referred to as RACT fix-up, requires the correction of RACT rules for which EPA identified deficiencies before the Act was amended in 1990. Allegheny County has no deficiencies to correct under this Section of the CAA.
- The second requirement, set forth in section 182(b)(2) of the CAA for VOC sources, applies to moderate or worse ozone NAAs. This requires NAAs to implement RACT controls on all major VOC sources and on all VOC sources and source categories covered by a Control Technique Guideline (CTG) issued by EPA.
- The third requirement is in section 182(f), and subjects major stationary sources of NOx to the same RACT requirements that are applicable to major sources of VOC. In addition, Section 184(b)(1)(B) of the CAA applies the RACT requirements in section 182(b)(2) for moderate nonattainment areas (and 182(f) by extension), to marginal nonattainment areas and attainment areas located within ozone transport regions (OTRs) established pursuant to section 184 of the CAA.

Under section 183 of the CAA, EPA was required to issue several guidance documents for RACT controls that would help states meet the requirements of section 182(b)(2). This requirement upon EPA includes developing (1) CTGs for controls of VOC emissions from stationary sources, and (2) Alternate Control Techniques (ACTs) for controls of VOC and NOX emissions from stationary sources.

The EPA has issued CTG documents both prior to, and after 1990, establishing a “presumptive norm” for RACT for various categories of VOC sources. The EPA has also issued over a dozen ACTs for various categories of VOCs and NOx sources. Section 182(b)(2) of the CAA specifically requires states with ozone non-attainment areas classified as moderate or worse to develop RACT controls for all pre-enactment (i.e., pre-1990) CTG source categories, for all sources subject to post-enactment (i.e., post-1990) CTGs, and for all non-CTG major sources in the non-attainment areas. CAA Section 182(f)(1) applies the same controls required in Section 182(b)(2) to sources of NOx.

This SIP Revision submittal addresses RACT for major stationary non-CTG VOC sources and major stationary NOx sources. Sources covered by CTG’s are not the subject of this RACT SIP revision.

The CAA requires that states achieve the NAAQS by specified dates, based on the severity of an area's air quality problem. The entire Commonwealth of Pennsylvania is considered a 'moderate' ozone non-attainment area for the 2008 8-hour ozone NAAQS because it is in an Ozone Transport Region (OTR) specified under Section 184 of the CAA, and is required by the CAA to attain the 2008 8-hour ozone standard by July 20, 2020.

According to the EPA's Final Rule to Implement the 2008 8-Hour Ozone NAAQS (80 FR 12264, March 6, 2015), areas classified as moderate non-attainment or higher, or located in an OTR, must submit a demonstration that their current rules fulfill the 2008 8-hour ozone RACT requirements for all CTG categories as well as **all major stationary non-CTG VOC sources and all major stationary NOx sources** as a revision to their SIPs (as noted, a demonstration regarding CTG sources is not part of this SIP revision). Such demonstrations can be made with either a new RACT determination or a certification that previously required RACT controls represent RACT for the 8-hour ozone standard. If a certification is made, it shall be accompanied by appropriate supporting information such as consideration of information received during the public comment period and consideration of new data.

2. ACHD previously submitted 2008 Ozone NAAQS SIP submittals – CTG Certification and majority of non-CTG VOC and NOx major sources

The Allegheny County Health Department has previously submitted the following SIP Revisions to meet the CAA and implementation rule requirements:

- ACHD submitted its 2018 VOC CTG RACT SIP submission (SIP Revision 84A) which included:
 - (1) A certification that for certain categories of sources, previously adopted VOC RACT controls in the Allegheny County portion of Pennsylvania's SIP that were approved by EPA under the 1979 1-hour and 1997 8-hour ozone NAAQS continue to be based on the currently available technically and economically feasible controls, and continue to represent RACT for implementation of the 2008 8-hour ozone NAAQS; and
 - (2) a negative declaration that certain CTG based regulated sources of VOC do not exist in Allegheny County, PA.

This SIP submittal was made on ACHD's behalf by PA DEP on July 24, 2018, and was approved by EPA on May 2, 2019 (84 FR 18736)

- PA DEP submitted its "RACT II Rules," 25 Pa. Code §129.96 to §129.100, "Additional RACT Requirements for major sources of NOx and VOCs," which apply statewide, as noted in §129.96(b), as a SIP revision on May 16, 2016. EPA granted conditional approval of this SIP revision on May 9, 2019 (84FR20274). ACHD applies and enforces the requirements of the PA DEP "RACT II Rules," 25 Pa. Code §129.96 to §129.100. In support of the conditional approval, ACHD conducted a review of the major VOC and NOx

sources operating in Allegheny County, and prepared case-by-case RACT determinations and related required permit modifications for the sources listed in Table 1, below, which are not subject to the presumptive RACT requirements of 25 Pa Code §129.97. The ACHD submitted its case by case RACT determinations/permits to PA DEP on April 24, 2020 as SIP Revision 84C with a certification that, with the SIP revision request submittal, it had submitted all of the case by case RACT determinations and averaging plans to the PA DEP required by the RACT II Conditional Approval, and that the additional enforceable measures in the RACT permits resolve the requirements of the EPA’s RACT II Conditional Approval. PA DEP submitted this SIP revision to U.S. EPA, along with its own similar certification on May 8, 2020.

Table 1

Facility Name
Universal Stainless and Alloy Products, Inc.
PPG Industries, Inc. – Springdale Plant
Bellefield Boiler Plant
Cheswick Generating Station
Brunot Island Generating Station
Neville Chemical Company
ATI Flat Rolled Products Holdings, LLC
Energy Center Pittsburgh, LLC
North Shore Plant
United States Steel Corporation, Edgar Thomson Works
United States Steel Corporation, Irvin Plant
Pittsburgh Allegheny County Thermal, LTD
Eastman Chemical Resins, Inc.
United States Steel Clairton Plant

3. Final ACHD 2008 Ozone NAAQS SIP submittal – RACT for major stationary non-CTG VOC sources and major stationary NOx sources: Completion of RACT demonstration addressing remaining sources not already addressed in ACHD SIP Submittals 84A and 84C.

This SIP Revision (84D) addresses RACT for all other major sources of NOX and VOC located in Allegheny County, i.e., those not already addressed by the CTG Certification SIP(84A), or the Case-by-Case Certification SIP(84C), and in so doing will complete the fulfilment of the requirements of Section 182(b)(2)(C) and 182(f)(1) of the CAA.

Table 2 lists all the major NOx and VOC sources in Allegheny County and indicates the SIP Revision that demonstrates RACT for each.

TABLE 2: Major VOC and NOx sources operating in Allegheny County and their RACT SIP coverage

The table below shows the major VOC and NOx sources operating in Allegheny County and indicates the SIP Revision submittal which demonstrates RACT for 8-hour ozone.

Facility name	SIP Addressed in:	Basic facility information	Permit number	Issue Date
Allegheny Energy Springdale Plant	SIP Revision 84D	Gas turbine power plant	0580-OP17	7/21/2017
University of Pittsburgh	SIP Revision 84D	Boilers	0647-OP19	12/19/2013
			These permits are not part of this SIP Submittal	
Universal Stainless	ACHD SIP84C/ PA DEP case-by-case SIP submittal	Steel mill	0027-OP17a	2/20/2020
PPG Springdale	ACHD SIP84C/ PA DEP case-by-case SIP submittal	Manufactures coatings for the industrial markets and includes administrative offices, manufacturing, warehousing, research & support laboratory operations	0057-OP18a	2/28/2020
Bellefield Boiler	ACHD SIP84C/ PA DEP case-by-case SIP submittal	The boiler plant provides steam to a consortium of hospitals, universities & museums	0047-I003	4/14/2020
ATI (Allegheny Ludlum)	ACHD SIP84C/ PA DEP case-by-case SIP submittal	Producer of specialty metals, irons, & steels (ingots, slabs, & coils)	0059-I009	4/16/2020
Cheswick Generating Station	ACHD SIP84C/ PA DEP case-by-case SIP submittal	Electricity utility	0054-I005	2/28/2020
Brunot Island Gen.	ACHD SIP84C/ PA DEP	Electricity generation	0056-	2/28/2020

Facility name	SIP Addressed in:	Basic facility information	Permit number	Issue Date
Station	case-by-case SIP submittal		I002	
Neville Chemical	ACHD SIP84C/ PA DEP case-by-case SIP submittal	Manufacturing of synthetic hydrocarbon resins, plasticizers, & Plasticizing oils	0060-OP15c	4/23/2020
Energy Center North Shore	ACHD SIP84C/ PA DEP case-by-case SIP submittal	Steam & chilled water supply for a district energy system. Boilers are fired primarily with natural gas	0022-I003	3/18/2020
US Steel - Irvin	ACHD SIP84C/ PA DEP case-by-case SIP submittal	Manufacturing of steel slabs, hot rolled, cold reduced, & finished steel coils	0050-OP16b	4/16/2020
US Steel - Edgar Thomson	ACHD SIP84C/ PA DEP case-by-case SIP submittal	Byproducts recovery facility for a steel mill. Major by operations	0051-I008	4/21/2020
PACT	ACHD SIP84C/ PA DEP case-by-case SIP submittal	District steam heating supply for multiple commercial, institutional & government buildings	0044-I001	3/25/2020
Eastman Chemical	ACHD SIP84C/ PA DEP case-by-case SIP submittal	Polymerizes petroleum distillates & aromatic monomers into resins using Friedel Crafts type catalysts in hydrocarbon diluents.	0058-I026	4/21/2020
US Steel - Clairton	ACHD SIP84C/ PA DEP case-by-case SIP submittal	Manufactures metallurgical coke for use in the steelmaking process at various steel mills	0052-I020	4/24/2020
Buckeye Pipeline	ACHD SIP84A – CTG certification SIP	Refined petroleum pipeline breakout station and bulk terminal	0040-OP19a	5/1/2019
Pittsburgh Terminals (Coraopolis)	ACHD SIP84A – CTG certification SIP	Bulk gasoline terminals	0041	6/22/2018
Sunoco Pittsburgh	ACHD SIP84A – CTG certification SIP	Bulk gasoline terminals	0007	6/30/2011
Neville Terminals (now LHT Terminals)	ACHD SIP84A – CTG certification SIP	Bulk gasoline terminals	0012a	6/27/2019
Gulf Oil (now LHT Terminals) Combined with #0012	ACHD SIP84A – CTG certification SIP	Bulk gasoline terminals	0062 0012a	8/30/2017 6/27/2019

Only two facilities, Allegheny Energy Springdale, and the University of Pittsburgh, do not have RACT established by either of the two already submitted RACT SIP submittals – CTG based regulatory or Case-by-Case RACT Determination.

The ACHD analysis of these two facilities has established that:

- Neither facility is subject to case-by-case RACT review. All sources at the facilities either meet Presumptive RACT II requirements in 25 Pa. Code §129.97 or are exempt as per 25 Pa. Code §129.96(c).
- There are no existing requirements under RACT I at either facility.
- Neither facility is subject to the four applicable non-CTG-based regulations listed in 25 Pa. Code §129.96(a). (Those four are §129.65, Ethylene production plants; §129.72, Manufacture of surface active agents; §129.75, Mobile equipment repair and refinishing; and §129.301-§129.310, Control of NOx emissions from glass melting furnace.)

The analysis for each of the two facilities is found in the Appendix to this submittal.

Therefore, this RACT SIP revision demonstrates that:

- 1) RACT controls have already been implemented on the two remaining major stationary sources of VOC and NOx emissions not already addressed in a SIP Revision submittal; and
- 2) All RACT controls are certified to represent RACT control levels under the 1997 and 2008 8-hour ozone NAAQS.

Conclusion:

Allegheny County Health Department (ACHD) demonstrates through this SIP revision that the Allegheny County portion of the Pennsylvania SIP meets the CAA RACT requirements for the 50 ton per year (tpy) non-CTG major VOC sources and for 100 tpy NOx sources. Required RACT controls already exist on the two remaining major stationary sources of VOC and NOx emissions not already addressed in a SIP Revision submittal. ACHD certifies that all major, non-CTG sources under ACHD jurisdiction are controlled to RACT or better standards.

B.

Documentation of Public Hearing and Certifications

Public hearing notice

Proof of publication of notice of hearing

Transmittals of hearing notice to EPA & PA DEP

Certification of hearing

Comment and response document

APPENDIX A

A.1 RACT Determination for Allegheny Energy Springdale Plant

**ALLEGHENY COUNTY HEALTH DEPARTMENT
AIR QUALITY PROGRAM**

May 13, 2020

SUBJECT: Reasonably Available Control Technology (RACT II) Determination
Allegheny Energy Supply Company, LLC/First Energy Corp.
3412 Forbes Avenue
Pittsburgh, PA 15260
Allegheny County

Title V Operating Permit No. 0580-OP17

TO: JoAnn Truchan, P.E.
Section Chief, Engineering

FROM: Bernadette Lipari
Air Quality Engineer

I. Executive Summary

The Allegheny Energy Springdale Plant is defined as a major source of NO_x and VOC emissions and was subjected to a Reasonably Achievable Control Technology II (RACT II) review by the Allegheny County Health Department (ACHD) required for the 1997 and 2008 Ozone National Ambient Air Quality Standard (NAAQS). The findings of the review established that the Allegheny Energy Springdale Plant is not subject to case-by-case RACT review.

Table 1A Technically and Financially Feasible Control Options Summary for NO_x

Unit ID	Emissions Unit	Financially Feasible Control Option	Current NO _x PTE	RACT Reduction	Revised NO _x PTE	Annualized Control Cost (\$/yr)	Cost Effectiveness (\$/ton NO _x removed)
There are no additional technically and financially feasible control options available for NO _x reduction.							

Table 1B Technically and Financially Feasible Control Options Summary for VOC

Unit ID	Emissions Unit	Financially Feasible Control Option	Current VOC PTE	RACT Reduction	Revised VOC PTE	Annualized Control Cost (\$/yr)	Cost Effectiveness (\$/ton NO _x removed)
There are no additional technically and financially feasible control options available for VOC reduction.							

These findings are based on the following documents:

- RACT analysis performed by ERG (RACT TSD – Allegheny Energy – draft – 2016-7-15.docx)

APPENDIX A

A.1 RACT Determination for Allegheny Energy Springdale Plant

II. Regulatory Basis

ACHD requested all major sources of NO_x (potential emissions of 100 tons per year or greater) and all major sources of VOC (potential emissions of 50 tons per year or greater) to reevaluate NO_x and/or VOC RACT for incorporation into Allegheny County's portion of the PA SIP. This document is the result of ACHD's determination of RACT for Allegheny Energy based on the materials submitted by the subject source and other relevant information.

III. Facility Description, Existing RACT I and Sources of NO_x

The Allegheny Energy Plant is a commercial electrical power generation facility. The source is composed of two 48 MWe natural gas & no.2 fuel oil fired simple cycle combustion turbines, two nominal 209 MWe natural gas-fired combined cycle combustion turbines each with a heat recovery steam generator and one 186 MWe steam turbine generator. The combined cycle combustion turbines fire natural gas exclusively and are equipped with dry low- NO_x burners and selective catalytic reduction (SCR) for control of NO_x emissions. The simple cycle combustion turbines fire natural gas and no.2 fuel oil exclusively and are equipped with water injection for NO_x control and use low sulfur (0.05% max.) fuel oil for SO₂ control. The steam turbine generator uses steam from the heat recovery steam generators and has no fuel supply and no emissions. Additional emission units consist of one 148,690 gallon per minute cooling tower and a 12,000-gallon aqueous ammonia storage tank. There are no existing requirements under RACT I at the facility.

Table 2 Facility Sources Subject to the Presumptive RACT II per PA Code 129.97

Source ID	Description	Rating	NO _x PTE (TPY)	VOC PTE (TPY)	Basis for Presumptive	Presumptive RACT Requirement
P001	2 Simple Cycle Turbines (AE1 & AE2)	48 MW (424 MMBtu/hr each (nominal))	98	--	< 42 ppmvd NO _x	129.97 (g)(2)(iv)(A): The existing permit limit is less than presumptive RACT; Continued operation as permitted and conduct an annual tune-up on each turbine
P002	2 Combined Cycle Turbines (AE3 & AE4); 1 Steam Turbine	188 MW (2,094 MMBtu/hr) each (no duct burner)	175*	--	< 4 ppmvd NO _x	129.97 (g)(2)(ii)(A): The existing permit limit is less than presumptive RACT; Continued operation as permitted and conduct an annual tune-up on each turbine
P001	2 Simple Cycle Turbines (AE1 & AE2)	48 MW (424 MMBtu/hr each (nominal))	--	10	< 9 ppmvd VOC	129.97 (g)(2)(iv)(C): The existing permit limit is less than presumptive RACT; Continued operation as permitted and conduct an annual tune-up on each turbine
P002	2 Combined Cycle Turbines (AE3 & AE4); 1 Steam Turbine (AE5)	188 MW (2,094 MMBtu/hr) each (no duct burner)	--	48	< 2 ppmvd VOC	129.97 (g)(2)(ii)(D): The existing permit limit is less than presumptive RACT; Continued operation as permitted and conduct an annual tune-up on each turbine

* Permit #0580-OP17 limits NO_x emissions to 210 tpy. However other restrictions effectively limit NO_x emissions to 175 tpy. See conditions IV.23 & IV.24 of the permit.

APPENDIX A

A.1 RACT Determination for Allegheny Energy Springdale Plant

Table 3 Facility Sources Exempt from RACT II per PA Code 129.96(c) {< 1 TPY VOC}

Source ID	Description	Rating	VOC PTE (TPY)
T-2	No. 2 Fuel Oil Storage Tank	500,000 gal	minimal

IV. RACT Determination

All sources at the facility either meet Presumptive RACT II requirements in PA Code 129.97 or are exempt as per PA Code 129.96(c).

Note that the PA Presumptive RACT would impose limits on simple cycle turbines the size of the Allegheny Energy simple cycle turbines of 42 ppmvd NO_x @ 15% oxygen when natural gas is fired and 96 ppmvd NO_x @ 15% oxygen when fuel oil is fired. These NO_x concentrations are greater than the current limits and performance of the Allegheny Energy simple cycle turbines and are equivalent to combined emission rates of 163 tpy NO_x when natural gas is combusted and 291 tons/yr of NO_x when fuel oil is combusted. The Proposed PA Presumptive RACT is 9 ppmvd of VOC (as propane) adjusted to 15% O₂ during either oil or natural gas firing; this is equivalent to approximately 42 tons/yr of VOC for both turbines combined when natural gas is fired and 42 tons/yr for both turbines combined when fuel oil is fired.¹ These PA Proposed Presumptive RACT VOC concentrations are greater than the current limits and performance of the simple cycle turbines.

Pursuant to operating permit 0580-OP17, issued July 21, 2017, NO_x emissions are limited as follows:

- Condition V.A.1.c, when natural gas is burned each turbine is limited to 41 lbs/hr;
- Condition V.A.1.c, when No. 2 fuel oil is burned each turbine is limited to 71 lbs/hr; and
- Condition V.A.1.c, total emissions from both turbines are limited to 98 tons/yr.

The above conditions effectively limit short-term emissions for each turbine to 0.1 lb/MMBtu when natural gas is burned [i.e., 41 lbs/hr divided by the turbine capacity 424 MMBtu/hr].

Pursuant to the operating permit, issued July 21, 2017, VOC emissions are limited as follows:

- Condition V.A.1.c, when natural gas is burned each turbine is limited to 5.0 lbs/hr;
- Condition V.A.1.c, when No. 2 fuel oil is burned each turbine is limited to 1.0 lbs/hr; and
- Condition V.A.1.c, total emissions from both turbines is limited to 10 tons/yr.

The above conditions effectively limit emissions to 0.0118 lb/MMBtu when natural gas is burned. Condition V.A.1.a restrict the total combined hours of operation to 4,450 hours per year.

For the natural gas fired combined cycle turbines, the PA presumptive RACT would impose limits of 4 ppmvd of NO_x and 2 ppmvd of VOC each adjusted to 15% O₂. These concentrations are equivalent to 285 tons/yr of NO_x and 170 tons/yr of VOC (with each limit being for both turbines combined).² The current NO_x and VOC permit limits are less than the PA Proposed Presumptive RACT. The current performance of the combined cycle turbines, with respect to NO_x is better than the PA proposed presumptive RACT. Performance tests conducted in 2012 show that actual

¹ This calculation assumes the molecular weight of VOC is 55 lbs/mole.

² *Id.*

APPENDIX A

A.1 RACT Determination for Allegheny Energy Springdale Plant

VOC emissions are just over 1ppmvd for both turbines, which is less than both the PA proposed presumptive RACT and current permit limits.³

Pursuant to Title V Operating Permit #0580-OP17, issued July 21, 2017, NO_x emissions are limited as follows:

- Condition V.B.1.d, each turbine is limited to 2.5 ppmvd at 15% oxygen during any three-hour period at or above 70% of full load;
- Condition V.B.1.i, each turbine is limited to 20 lbs/hr during any three-hour period; and
- Condition V.B.1.i, total emissions from both turbines are limited to 210 tons/yr.

The above conditions effectively limit emissions to 0.00955 lb/MMBtu [i.e., 20 lbs/hr divided by the turbine capacity 2,094 MMBtu/hr] or 87.6 tpy for each turbine. Condition V.B.1.i restricts the total combined NO_x emissions to 210 tpy, although the other limits effectively limit total emissions to 175.2 tpy.

Pursuant to the operating permit, issued July 21, 2017, VOC emissions are limited as follows:

- Condition V.B.1.i, when natural gas is burned each turbine is limited to 3.8 lbs/hr; and
- Condition V.B.1.i, total emissions from both turbines is limited to 48 tons/yr.

The above conditions effectively limit short term emissions to 0.0018 lb/MMBtu when natural gas is burned.

ACHD has determined that it is not necessary to conduct a RACT evaluation on the steam turbine (AE-5). It does not produce NO_x or VOC. Thermal energy from the natural gas turbines (AE-3 and AE-4) is channeled through the steam turbine, spins the rotor of a generator, and electric energy is produced.

ACHD has also determined that it is not necessary to conduct RACT evaluations for the 265 HP diesel fired emergency fire pump and the 830 HP diesel fired emergency generator. This decision was made based on the relatively low potential emissions of the pollutants identified from these units. ACHD considers it unlikely that additional controls would be technically and economically feasible for these units for the identified pollutants.

V. New and Revised RACT II IP/OP Permit Conditions

All sources at the facility either meet Presumptive RACT II requirements in PA Code 129.97 or are exempt as per PA Code 129.96(c). The Title V permit will be revised to add the appropriate PA RACT II regulation citations for each of these sources.

The following conditions will be cited for Presumptive RACT (25 Pa. Code, §129.97 (g)(2)(iv)(A) & (C)):

TVOP #0580 V.A.1.a, c

The following conditions will be cited for Presumptive RACT (25 Pa. Code, §129.97 (g)(2)(ii)(A) & (D)):

TVOP #0580 V.B.1.d, I

³ Grace Consulting Inc., VOC Emission Test Performance of Units 3 and 4. Performed on August 14, 2012.

APPENDIX A
A.2 RACT Determination for University of Pittsburgh

**ALLEGHENY COUNTY HEALTH DEPARTMENT
AIR QUALITY PROGRAM**

May 18, 2020

SUBJECT: Reasonably Available Control Technology (RACT II) Determination
University of Pittsburgh
3412 Forbes Avenue
Pittsburgh, PA 15260
Allegheny County

Title V Operating Permit No. 0647-OP19

TO: JoAnn Truchan, P.E.
Section Chief, Engineering

FROM: Bernadette Lipari
Air Quality Engineer

I. Executive Summary

The University of Pittsburgh is defined as a major source of NO_x emissions and was subjected to a Reasonably Achievable Control Technology II (RACT II) review by the Allegheny County Health Department (ACHD) required for the 1997 and 2008 Ozone National Ambient Air Quality Standard (NAAQS). The findings of the review established that the University of Pittsburgh is not subject to case-by-case RACT review.

Table 1 Technically and Financially Feasible Control Options Summary for NO_x

Unit ID	Emissions Unit	Financially Feasible Control Option	Current NO _x PTE	RACT Reduction	Revised NO _x PTE	Annualized Control Cost (\$/yr)	Cost Effectiveness (\$/ton NO _x removed)
There are no additional technically and financially feasible control options available for NO _x reduction.							

These findings are based on the following documents:

- RACT analysis performed by ERG (RACT-Pitt_06-17-2015 with track changes.docx)
- RACT analysis performed by University of Pittsburgh (0647c2014-01-29ract.pdf)
- BACT analysis performed by University of Pittsburgh (see Application for Permit No. 0678-I001 dated 11/20/2003 and No. 0678-I002 dated 11/2/2007)

APPENDIX A

A.2 RACT Determination for University of Pittsburgh

II. Regulatory Basis

ACHD requested all major sources of NO_x (potential emissions of 100 tons per year or greater) and all major sources of VOC (potential emissions of 50 tons per year or greater) to reevaluate NO_x and/or VOC RACT for incorporation into Allegheny County's portion of the PA SIP. This document is the result of ACHD's determination of RACT for University of Pittsburgh based on the materials submitted by the subject source and other relevant information.

III. Facility Description, Existing RACT I and Sources of NO_x

The University of Pittsburgh is a public university located in Pittsburgh. The source consists of one (1) campus-wide painting, one (1) Melwood spray booth, one printing operations, one (1) Melwood laminate spray area, seventy-five (75) natural gas-fired boilers, six (6) natural gas fired boilers using No. 2 fuel oil as backup fuel with two (2) diesel-fired emergency generator engines, thirteen (13) natural gas-fired space heaters, forty-three (43) natural gas-fired hot water heaters, seventy-two (72) diesel-fired emergency generator engines, and five (5) natural gas-fired emergency generator engines. There is one diesel storage tank associated with each diesel fired emergency generator and the boilers using fuel oil as backup fuel. The University also acquired the Biomedical Science Tower (BST) Incinerator in a transfer from the University of Pittsburgh Medical Center. The University of Pittsburgh is a major source of NO_x emissions. There are no existing requirements under RACT I at the facility.

Table 2 Facility Sources Subject to the Presumptive RACT II per PA Code 129.97

Source ID	Description	Rating	NO _x PTE (TPY)	Basis for Presumptive	Presumptive RACT Requirement
B23A	Natural Gas Boiler	10.71 MMBtu/hr	3.70	< 20 MMBtu/hr	129.97 (c)(3): Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
B23B	Natural Gas Boiler	8.67 MMBtu/hr	3.00	< 20 MMBtu/hr	129.97 (c)(3): Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
B23C	Natural Gas Boiler	8.67 MMBtu/hr	3.00	< 20 MMBtu/hr	129.97 (c)(3): Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
B48-1	Natural Gas Boiler	140 MMBtu/hr	48.44	< 0.10 lb/MMBtu	129.97 (g)(1)(i): The existing permit limit is less than presumptive RACT
B48-2	Natural Gas Boiler	140 MMBtu/hr	48.44	< 0.10 lb/MMBtu	129.97 (g)(1)(i): The existing permit limit is less than presumptive RACT
B48-3	Natural Gas Boiler	140 MMBtu/hr	48.44	< 0.10 lb/MMBtu	129.97 (g)(1)(i): The existing permit limit is less than presumptive RACT
B48-4	Natural Gas Boiler	140 MMBtu/hr	48.44	< 0.10 lb/MMBtu	129.97 (g)(1)(i): The existing permit limit is less than presumptive RACT
B48-5	Natural Gas Boiler	140 MMBtu/hr	48.44	< 0.10 lb/MMBtu	129.97 (g)(1)(i): The existing permit limit is less than presumptive RACT
B48-6	Natural Gas Boiler	140 MMBtu/hr	48.44	< 0.10 lb/MMBtu	129.97 (g)(1)(i): The existing permit limit is less than presumptive RACT
B55A	Natural Gas Boiler	3.5 MMBtu/hr	1.21	< 20 MMBtu/hr	129.97 (c)(3): Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
B55B	Natural Gas Boiler	3.5 MMBtu/hr	1.21	< 20 MMBtu/hr	129.97 (c)(3): Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
B56A	Natural Gas Boiler	3.5 MMBtu/hr	1.21	< 20 MMBtu/hr	129.97 (c)(3): Install, maintain and operate the source in accordance with the manufacturer's

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Source ID	Description	Rating	NO _x PTE (TPY)	Basis for Presumptive	Presumptive RACT Requirement
					specifications and with good operating practices
B56B	Natural Gas Boiler	3.5 MMBtu/hr	1.21	< 20 MMBtu/hr	129.97 (c)(3): Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
DG04	Diesel Emergency Generator	912 hp	1.26	< 500 hr/yr	129.97 (c)(8): Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
DG05	Diesel Emergency Generator	805 hp	1.11	< 500 hr/yr	129.97 (c)(8): Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
DG17	Diesel Emergency Generator	268 hp	1.91	< 500 hr/yr	129.97 (c)(8): Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
DG29	Diesel Emergency Generator	1,676 hp	2.31	< 500 hr/yr	129.97 (c)(8): Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
DG33-1	Diesel Emergency Generator	1,341 hp	1.79	< 500 hr/yr	129.97 (c)(8): Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
DG33-2	Diesel Emergency Generator	1,341 hp	1.79	< 500 hr/yr	129.97 (c)(8): Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
DG40	Diesel Emergency Generator	1,341 hp	1.85	< 500 hr/yr	129.97 (c)(8): Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
DG41	Diesel Emergency Generator	1,207 hp	0.67	< 500 hr/yr	129.97 (c)(8): Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
DG43	Diesel Emergency Generator	2,012 hp	2.78	< 500 hr/yr	129.97 (c)(8): Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
DG44	Diesel Emergency Generator	2,347 hp	3.24	< 500 hr/yr	129.97 (c)(8): Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
DG47	Diesel Emergency Generator	1,006 hp	1.39	< 500 hr/yr	129.97 (c)(8): Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
DG54	Diesel Emergency Generator	1,073 hp	1.48	< 500 hr/yr	129.97 (c)(8): Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
DG56	Diesel Emergency Generator	335 hp	2.39	< 500 hr/yr	129.97 (c)(8): Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
DG57	Diesel Emergency Generator	201 hp	1.43	< 500 hr/yr	129.97 (c)(8): Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
DG58	Diesel Emergency Generator	805 hp	4.44	< 500 hr/yr	129.97 (c)(8): Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
DG59	Diesel Emergency Generator	671 hp	3.70	< 500 hr/yr	129.97 (c)(8): Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
DG61	Diesel Emergency Generator	1,073 hp	5.92	< 500 hr/yr	129.97 (c)(8): Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
DG63	Diesel Emergency Generator	2,012 hp	11.10	< 500 hr/yr	129.97 (c)(8): Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
DG77	Diesel Emergency Generator	872 hp	1.55	< 500 hr/yr	129.97 (c)(8): Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices

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Table 3 Facility Sources Exempt from RACT II per PA Code 129.96(c) {< 1 TPY NO_x}

Source ID	Description	Rating	NO _x PTE (TPY)
B1-B9	Natural Gas Boiler	3.96 MMBtu/hr	1.37*
B10-B11	Natural Gas Boiler	1.4 MMBtu/hr	0.48
B22	Natural Gas Boiler	0.64 MMBtu/hr	0.22
B26	Natural Gas Boiler	1.05 MMBtu/hr	0.36
B27	Natural Gas Boiler	1.0 MMBtu/hr	0.35
B28A, B	Natural Gas Boiler	1.2 MMBtu/hr	0.41
B30A, B, C	Natural Gas Boiler	3.09 MMBtu/hr	1.07*
B31	Natural Gas Boiler	1.89 MMBtu/hr	0.65
B33A, B, C	Natural Gas Boiler	0.45 MMBtu/hr	0.16
B35A, B, C	Natural Gas Boiler	0.25 MMBtu/hr	0.26
B36	Natural Gas Boiler	0.24 MMBtu/hr	0.08
B37	Natural Gas Boiler	0.18 MMBtu/hr	0.06
B38	Natural Gas Boiler	0.54 MMBtu/hr	0.19
B39A, B, C	Natural Gas Boiler	0.17 MMBtu/hr	0.17
B40A, B	Natural Gas Boiler	0.25 MMBtu/hr	0.17
B41A, B	Natural Gas Boiler	0.25 MMBtu/hr	0.17
B42A, B	Natural Gas Boiler	0.29 MMBtu/hr	0.28
B43A, B	Natural Gas Boiler	0.29 MMBtu/hr	0.20
B44A, B	Natural Gas Boiler	0.29 MMBtu/hr	0.28
B45	Natural Gas Boiler	0.91 MMBtu/hr	0.31
B46A, B	Natural Gas Boiler	0.50 MMBtu/hr	0.35
B47	Natural Gas Boiler	1.44 MMBtu/hr	0.50
B49A, B	Natural Gas Boiler	1.44 MMBtu/hr	1.00*
B50A, B	Natural Gas Boiler	2.15 MMBtu/hr	1.48*
B51	Natural Gas Boiler	0.20 MMBtu/hr	0.07
B52A, B	Natural Gas Boiler	0.05 MMBtu/hr	0.35
B53A, B	Natural Gas Boiler	0.05 MMBtu/hr	0.35
B54	Natural Gas Boiler	0.84 MMBtu/hr	0.29
B57A, B, C	Natural Gas Boiler	2.0 MMBtu/hr	2.07*
H1A, B	Natural Gas Space Heater	0.20 MMBtu/hr	0.069
H2A-H2F	Natural Gas Space Heater	0.90 MMBtu/hr	0.311
H3A-H3E	Natural Gas Space Heater	4.6 MMBtu/hr	1.59*
HW1-HW8 & HW11-HW18	Natural Gas Water Heater	1.39 MMBtu/hr	0.684
HW19-HW22	Natural Gas Water Heater	4.24 MMBtu/hr	2.09*
HW23-HW24	Natural Gas Water Heater	1.6 MMBtu/hr	0.79
HW25	Natural Gas Water Heater	1.1 MMBtu/hr	0.54
HW26	Natural Gas Water Heater	0.065 MMBtu/hr	0.032
HW27	Natural Gas Water Heater	0.076 MMBtu/hr	0.038
HW28	Natural Gas Water Heater	0.19 MMBtu/hr	0.094
HW29	Natural Gas Water Heater	0.20 MMBtu/hr	0.098
HW30A, B	Natural Gas Water Heater	1.98 MMBtu/hr	0.98
HW31A, B	Natural Gas Water Heater	1.98 MMBtu/hr	0.98
HW32A-E	Natural Gas Water Heater	9.25 MMBtu/hr	3.20
HW33A, B	Natural Gas Water Heater	0.68 MMBtu/hr	0.24
HW34A-C	Natural Gas Water Heater	5.76 MMBtu/hr	1.99*
HW35	Natural Gas Water Heater	1.16 MMBtu/hr	0.40
HW36	Natural Gas Water Heater	1.06 MMBtu/hr	0.37
NG6	Natural Gas Emergency Generator	0.60 MMBtu/hr	0.029
NG17	Natural Gas Emergency Generator	0.60 MMBtu/hr	0.116
NG18	Natural Gas Emergency Generator	0.29 MMBtu/hr	0.014
NG8	Natural Gas Emergency Generator	0.34 MMBtu/hr	0.017
NG20	Natural Gas Emergency Generator	2.05 MMBtu/hr	0.100
DG01	Diesel Emergency Generator	107 hp	0.19

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Source ID	Description	Rating	NO _x PTE (TPY)
DG02	Diesel Emergency Generator	67 hp	0.12
DG03	Diesel Emergency Generator	268 hp	0.48
DG06	Diesel Emergency Generator	335 hp	0.60
DG07	Diesel Emergency Generator	80 hp	0.14
DG08	Diesel Emergency Generator	168 hp	0.30
DG09	Diesel Emergency Generator	134 hp	0.96
DG10	Diesel Emergency Generator	268 hp	0.48
DG11	Diesel Emergency Generator	34 hp	0.06
DG12	Diesel Emergency Generator	235 hp	0.42
DG13	Diesel Emergency Generator	402 hp	0.72
DG14	Diesel Emergency Generator	308 hp	0.55
DG16	Diesel Emergency Generator	107 hp	0.76
DG18	Diesel Emergency Generator	101 hp	0.18
DG19	Diesel Emergency Generator	268 hp	0.48
DG21	Diesel Emergency Generator	335 hp	0.60
DG22	Diesel Emergency Generator	134 hp	0.24
DG23	Diesel Emergency Generator	201 hp	0.36
DG24	Diesel Emergency Generator	369 hp	0.66
DG25	Diesel Emergency Generator	268 hp	0.48
DG26	Diesel Emergency Generator	536 hp	0.96
DG27	Diesel Emergency Generator	308 hp	0.55
DG28	Diesel Emergency Generator	355 hp	0.63
DG30	Diesel Emergency Generator	536 hp	0.96
DG31	Diesel Emergency Generator	110 hp	0.20
DG32	Diesel Emergency Generator	87 hp	0.16
DG34	Diesel Emergency Generator	536 hp	0.96
DG35	Diesel Emergency Generator	47 hp	0.08
DG36	Diesel Emergency Generator	134 hp	0.24
DG37	Diesel Emergency Generator	83 hp	0.15
DG42	Diesel Emergency Generator	536 hp	0.96
DG45	Diesel Emergency Generator	168 hp	0.30
DG46	Diesel Emergency Generator	308 hp	0.55
DG48	Diesel Emergency Generator	107 hp	0.19
DG50	Diesel Emergency Generator	402 hp	0.72
DG51	Diesel Emergency Generator	21 hp	0.04
DG52	Diesel Emergency Generator	15 hp	0.03
DG53	Diesel Emergency Generator	9 hp	0.02
DG60	Diesel Emergency Generator	80 hp	0.57
DG62	Diesel Emergency Generator	134 hp	0.96
DG64	Diesel Emergency Generator	201 hp	0.36
DG65	Diesel Emergency Generator	134 hp	0.24
DG66	Diesel Emergency Generator	87 hp	0.16
DG67	Diesel Emergency Generator	268 hp	0.48
DG68	Diesel Emergency Generator	335 hp	0.60
DG69	Diesel Emergency Generator	402 hp	0.72
DG70	Diesel Emergency Generator	268 hp	0.48
DG71	Diesel Emergency Generator	398 hp	0.13
DG72	Diesel Emergency Generator	900 hp	0.63
DG73	Diesel Emergency Generator	520 hp	0.25
DG74	Diesel Emergency Generator	1,135 hp	0.74
DG75	Diesel Emergency Generator	168 hp	0.30
DG76	Diesel Emergency Generator	134 hp	0.24
I004	Natural Gas Incinerator	5 MMBtu/hr	0.53

*Individual units are less than 1 TPY

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IV. RACT Determination

All sources at the facility either meet Presumptive RACT II requirements in PA Code 129.97 or are exempt as per PA Code 129.96(c).

Boilers B48-1 through B48-6 meet BACT requirements. Boilers B23A-C, B55A-B, and B56A-B meet presumptive RACT II requirements per PA Code 129.97(c)(3). The boilers in Table 3 are exempt from RACT II per PA Code 129.97(c)(1).

Laboratory fume hood emissions are negligible.

V. New and Revised RACT II IP/OP Permit Conditions

All sources at the facility either meet Presumptive RACT II requirements in PA Code 129.97 or are exempt as per PA Code 129.96(c). The Title V permit will be revised to add the appropriate PA RACT II regulation citations for each of these sources.

The following conditions were cited for compliance Presumptive RACT (25 Pa. Code, §129.97(c)(1)):

TVOP #0647-OP19	
V.G.1.a, c, m	V.G.6

The following conditions were cited for compliance with Presumptive RACT (25 Pa. Code, §129.97(c)(3)):

TVOP #0647-OP19	
V.B.1.e	V.C.1.d
V.B.6	V.C.6

The following conditions were cited for compliance with Presumptive RACT (25 Pa. Code, §129.97(c)(8)):

TVOP #0647-OP19	
V.E.1.c, d, g, j, k, m, n	V.F.1.b
V.E.6	V.F.6

The following conditions were cited for compliance with Presumptive RACT (25 Pa. Code, §129.97(g)(1)(i)):

TVOP #0647-OP19	
V.D.1.o, v	V.D.6.a